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U.S. Election Assistance Commission

Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, July 9, 2004

Resolution #01-04,   Offered by: Dr. Harding

Three subcommittees shall be established to gather and analyze information.

Subcommittees shall be comprised only of TGDC members. Subcommittees shall propose

resolutions to the TGDC on best practices, specifications and standards. Subcommittees

shall be named:

       i)   Security and Transparency,

       ii)   Human Factors and Privacy, and

       iii)   Core Requirements and Testing.

       I hereby certify the accuracy of Resolution #01-04:

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Craig S. Burkhardt, Parlimentarian

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U.S. Election Assistance Commission

Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, July 9, 2004

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Resolution #02-04,   Offered by: Mr. Berger

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The Chair shall survey the interest of TGDC members, and thereafter appoint the

members and chairs of the subcommittees.

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           I hereby certify the accuracy of Resolution #02-04:

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Craig S. Burkhardt, Parlimentarian

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Technical Guidelines Development Committee

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Resolution adopted by the TGDC at their plenary meeting, July 9, 2004

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6 **Resolution #03-04**,   Offered by: Dr. Harding

7

8 Resolutions prepared by the subcommittees shall be considered by the TGDC. Resolutions

9 adopted by the TGDC shall be referred to NIST for technical assistance and editing. Upon

10 return from NIST, the TGDC shall review the resolutions to confirm they conform to its

11 intent.

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16   I hereby certify the accuracy of Resolution #03-04:

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18   _____
19   Craig S. Burkhardt, Parlimentarian
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U.S. Election Assistance Commission

Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, July 9, 2004

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Resolution #04-04,   Offered by: Ms. Davidson

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Adopted resolutions and appropriate explanatory materials comprise the "first set of

recommendations" mandated by the Help America Vote Act.

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I hereby certify the accuracy of Resolution #04-04:

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17   _____
18   Craig S. Burkhardt, Parlimentarian

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<p align="center">**U.S. Election Assistance Commission**</p>

<p align="center">**Technical Guidelines Development Committee**</p>

<p align="center">*Resolution adopted by the TGDC at their plenary meeting, July 9, 2004*</p>

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Resolution #05-04,   Offered by: Mr. Craft

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The TGDC shall recommend to the EAC that they expedite making currently certified

voting software available to the National Software Reference Library as soon as possible.

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<p align="center">I hereby certify the accuracy of Resolution #05-04:</p>

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Craig S. Burkhardt, Parlimentarian

         U.S. Election Assistance Commission

2   **Technical Guidelines Development Committee**

3   *Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005*

4

5   **Resolution #01-05**,   Offered by: Ms. Quesenbery

6   Title: Work Product Instructions to Staff of National Institute for Standards and

7   Technology (NIST)

8

9   The TGDC intends to consider and adopt resolutions during its January 18 and 19,

10   2005 meeting. Each resolution will make certain findings or conclusions. The

11   resolutions will also request specific technical assistance from NIST.

12

13   At the conclusion of the meeting, the TGDC Chair will sort the adopted resolutions

14   by priority. Priority is to be given to resolutions and requests for technical support

15   that can result in work product that will form a part of the April initial

16   recommendations of the TGDC.

17

18   Generally, NIST staff members with subject matter expertise will be instructed by the

19   TGDC Chair and his designates to conduct further research and inquiry, gather and

20   evaluate existing standards or standards-like materials which apply to the resolution,

21   and revise such materials or draft new standards or standards-like materials. In many

22   cases, there may be few existing standards materials related to a resolution. In those

23

1   instances, NIST staff is generally instructed to gather, review, revise, or write relevant

2   standards-related materials. The NIST technical assistance work product will be

3   categorized as pre-decisional materials, and should be provided directly to members

4   of the TGDC for their review.

5

6   If, in the course of providing technical assistance, NIST staff discovers significant

7   errors in an adopted resolution or otherwise concludes that to continue providing

8   technical assistance is unwise, technical assistance should be temporarily halted.

9   Such reasons to halt technical assistance may also include discovery that a requested

10   task is technically infeasible, or that the scope of the request exceeds the capabilities

11   or legal authorities of NIST. NIST shall immediately bring the matter to the attention

12   to the TGDC Chair, who will consult with the sponsor of the resolution and the Chair

13   of the applicable subcommittee. If the TGDC Chair, subcommittee Chair and

14   resolution sponsor agree that the request for technical assistance to NIST should be

15   revised, they shall have authority to do so. In such cases, a new or revised request for

16   technical assistance shall be issued to NIST in writing, with copies to all TGDC

17   members. In such cases, the sponsor of the relevant adopted resolution shall examine

18   whether the adopted resolution should be reconsidered or revised during a subsequent

19   meeting of the TGDC. If so, the parliamentarian should be consulted to draft the

20   appropriate resolution materials.

21

22   If, in the course of providing technical assistance, NIST staff discovers an alternative

23   approach that logically fits into the scope of an adopted resolution, NIST staff may

1   develop and present the alternate approach. In such cases, NIST staff shall also

2   provide the technical assistance specified in the resolution.

3

4   If, in the course of providing technical assistance, NIST staff discovers duplicative or

5   conflicting resolution findings or requests for technical assistance, the TGDC Chair

6   shall be consulted. In such instances, the TGDC Chair shall consult the Chair of the

7   applicable subcommittee and the sponsor of the resolution(s) for clarification. The

8   Chair shall then issue a new written request for technical assistance to NIST and

9   provide copies to TGDC members.

10

11   During subsequent meetings of the TGDC, members of the TGDC may consider,

12   amend and adopt the technical assistance work product. Such adopted technical

13   assistance work product will be appended to the appropriate resolution, and will form

14   a portion of the initial recommendations to the Election Assistance Commission.

15

16   All work products to be considered by NIST shall be received no later than five

17   working days prior to public meetings by members of the TGDC prior to

18   consideration.

19

20   I hereby certify the accuracy of Resolution #01-05:

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22   _____

23   Craig S. Burkhardt, Parlimentarian

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U.S. Election Assistance Commission

Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005

5

Resolution #02-05,   Offered by: Ms. Quesenbery

Title: Accessible Voting Systems

8

The TGDC has concluded that standards for voting systems should include requirements

for accessibility that meet the HAVA requirement for accessible voting by incorporating

the latest available accessible technology.   Further, the TGDC directs NIST to research

and draft standards based on, but not limited to, existing requirements from the VSS 2002,

IEEE P1583 draft 5.3.2a, *ADA Accessibility Guidelines (ADAAG)*, 36 CFR Part 1194

(section 508) and other relevant usability and accessibility guidelines and federal laws and

regulations in order to develop future accessibility requirements for voting systems.

16

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I hereby certify the accuracy of Resolution #02-05:

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Craig S. Burkhardt, Parlimentarian

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U.S. Election Assistance Commission

Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005

Resolution #03-05,   Offered by: Ms. Quesenbery

 Title: Human Factors and Privacy of Voting Systems at the Polling Place

The TGDC has considered the issue of what is required to ensure both access to the voting

system by voters with disabilities, and usability and privacy for all voters.   It has

concluded that usability, accessibility, and privacy are functions of both the system used

to vote and the environment of the polling place. The TGDC directs NIST to research and

draft guidance on the deployment and configuration of systems in the polling place to

ensure usability, accessibility, and privacy. These guidelines should be combined with the

accessibility standards described in Resolution #02-05 or the standards described in

Resolution #04-05.

            I hereby certify the accuracy of Resolution #03-05:

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            Craig S. Burkhardt, Parlimentarian

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U.S. Election Assistance Commission

Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005

Resolution #04-05,   Offered by: Ms. Quesenbery

Title: Human Factors and Privacy Requirements for Capturing Indication of a Voter's

Choice

The TGDC recognized the need for voting system requirements to include human factors

and privacy requirements for capturing indication of a voter's choice based on current

research. These requirements should be specified so that systems can be evaluated for

meeting the requirements. Unclear specifications, such as "intuitive", "unambiguous", or

"meaningful" should be avoided. Further, performance-based standards are preferred over

specific design standards, because performance standards address the total effectiveness of

the system more directly than do design standards and typically they are not technology

specific. The TGDC directs NIST to:

1. Create an outline of the human factors and privacy requirements related to

capturing indication of a voter's choice,

2. Write draft human factors and privacy standards based on this outline by using

existing requirements from the VSS2002, IEEE P1583 draft 5.3.2a, *ADA*

1

1   *Accessibility Guidelines (ADAAG)*, 36 CFR Part 1194 (section 508)

2   and other relevant usability and accessibility guidelines and regulations,

3   3. Identify areas where further requirements development for capturing indication of

4   a voter's choice is needed, noting when performance-based usability standards are

5   possible, and

6   4. Write all requirements so that they are testable and the tests themselves can be

7   conducted either by inspection by a person with reasonable knowledge of systems,

8   user interface design, and accessibility or by performance-based usability tests

9   with clear, repeatable protocols.

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12   I hereby certify the accuracy of Resolution #04-05:

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14   _____

15   Craig S. Burkhardt, Parlimentarian

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U.S. Election Assistance Commission

Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005

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6   **Resolution #05-05,**   Offered by: Ms. Quesenbery

7   Title: Human Performance-Based Standards and Usability Testing

8

9   The TGDC has concluded that voting systems requirements should be based, wherever

10 possible, on human performance benchmarks for efficiency, accuracy or effectiveness,

11 and voter confidence or satisfaction. This conclusion is based, in part, on the analysis in

12 the NIST Report, *Improving the Usability and Accessibility of Voting Systems and*

13 *Products* (NIST Special Publication 500-256). Performance requirements should be

14 preferred over design requirements. They should focus on the performance of the interface

15 or interaction, rather than on the implementation details. When it is not possible to specify

16 performance requirements (whether because conformance tests cannot be formulated or

17 because they would be too onerous to implement), testable, implementation-neutral design

18 requirements should be used. Conformance tests for performance requirements should be

19 based on human performance tests conducted with human voters as the test participants.

20 The TGDC also recognizes that this is a new approach to the development of usability

21 standards for voting systems and will require some research to develop the human

22 performance benchmarks and the test protocols.   Therefore, the TGDC directs NIST to:

1

2   1. Create a roadmap for developing performance-based standards, based on the

3   preliminary work done for drafting the standards described in Resolution # 4-05,

4   2. Develop human performance metrics for efficiency, accuracy, and voter

5   satisfaction,

6   3. Develop the performance benchmarks based on human performance data gathered

7   from measuring current state-of-the-art technology,

8   4. Develop a conformance test protocol for usability measurement of the

9   benchmarks,

10   5. Validate the test protocol, and

11   6. Document test protocol and benchmarks so that an independent test laboratory can

12   reproduce the testing.

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15   I hereby certify the accuracy of Resolution #05-05:

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17   _____
18   Craig S. Burkhardt, Parlimentarian
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U.S. Election Assistance Commission

Technical Guidelines Development Committee

3   *Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005*

4

5   **Resolution #06-05,**   Offered by: Ms. Quesenbery

6   Title: Accommodating a Wide Range of Human Abilities

7

8   The TGDC recognizes that there is a wide range of human abilities. The voting population

9   includes not only people with specifically identified disabilities but also the aging population,

10   language minorities, and people with other special needs. A goal of voting system standards

11   should be to accommodate, as much as possible, this wide range of abilities to ensure the

12   greatest usability and accessibility of those systems. This approach is sometimes called

13   "universal design" or "universal usability." In drafting standards, the TGDC directs NIST to:

14   1.   Consider what accommodations to voter abilities can be included in the standards for

15   all voting systems, using currently available technology, and

16   2.   Develop principles for "universal design" based on existing best practices and other

17   guidelines or standards such as 36 CFR 1194 (Section 508), to guide future standards

18   development to aid in updating the voting system standards.

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20   I hereby certify the accuracy of Resolution #06-05:

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22   _____
23   Craig S. Burkhardt, Parlimentarian

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U.S. Election Assistance Commission

Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005

5

Resolution #08-05,   Offered by: Ms. Quesenbery

Title: Usability Guidance for Instructions, Ballot Design, and Error Messages

8

The TGDC has considered the issue of what is required to improve usability and reduce

errors for capturing indication of a voter's choice. It has concluded that usability is a

function of the machine used to vote as well as other characteristics of the voting system

such as the instructions for voters and poll workers, ballot design, and machine error and

help messages. Research and best practices in the areas of plain language design, form

design, and usability are potentially relevant to such voting system characteristics. The

TGDC directs NIST to research and draft guidelines and standards where possible to

improve the usability of instructions, ballot design, and error and help messages in all

formats used. These guidelines should be combined with the standards described in

Resolution # 4-05.

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I hereby certify the accuracy of Resolution #08-05:

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23   Craig S. Burkhardt, Parlimentarian

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U.S. Election Assistance Commission

Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005

5

Resolution #09-05,   Offered by: Ms. Quesenbery

Title: General Voting System Human Factors and Privacy Considerations

8

Errors in the voting process are due to human error and the TGDC notes many examples

from recent elections to support this statement. While requirements for capturing

indication of a voter's choice is the primary area for human factors and privacy standards

development, the TGDC recognizes that all proposed requirements that involve human

interaction with the voting system should address any possible human factors and privacy

implications.   Therefore, the TGDC directs NIST to review all proposed requirements,

assess which requirements involve user interaction, and perform the evaluation or research

needed to ensure that basic usability, accessibility, and privacy is maintained when these

requirements are applied to a voting system.

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I hereby certify the accuracy of Resolution #09-05:

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Craig S. Burkhardt, Parlimentarian

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U.S. Election Assistance Commission

Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005

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Resolution # 10-05, Offered by: Ms. Quesenbery

Title: Usability of the Standards

8

The TGDC recognizes the importance of the usability of the voting systems standards.

Independent testing laboratories, election officials, and vendors need to understand these

standards and also understand how a system is tested for conformance to the standards in

order to have confidence in voting systems that pass the conformance tests.   Therefore, to

the extent possible, the voting system standards should be written in plain language,

understandable by both test experts and by voting officials who are not experts in human

factors or design.

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I hereby certify the accuracy of Resolution #10-05:

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Craig S. Burkhardt, Parlimentarian

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U.S. Election Assistance Commission

Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005

5

Resolution # 11-05,   Offered by: Ms. Quesenbery

Title: Availability of Voting Machines for Validating Benchmarks and Conformance

Test Protocols

9

The TGDC is aware that the definition and validation of human performance benchmarks

and human performance test protocols as described in the NIST Report, *Improving the*

Usability and Accessibility of Voting Systems and Products (Special Publication 500-256),

requires testing on a set of typical, state-of-the-art voting machines.   The TGDC directs

NIST to work with the EAC to determine a means to acquire such voting machines and

then make them available to enable NIST to perform the work described in Resolution

#05-05.

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I hereby certify the accuracy of Resolution #11-05:

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Craig S. Burkhardt, Parlimentarian

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<div align="center">**U.S. Election Assistance Commission**</div>

<div align="center">**Technical Guidelines Development Committee**</div>

<div align="center">*Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005*</div>

5

Resolution #12- 05,   Offered by: Dr. Rivest

Title: Voter Verifiability I

8

The TGDC has considered the various means by which a voting system allows a voter to

verify that his or her vote was captured as the indication of the voter's choice. All voting

systems must provide such means, as stated in HAVA 2002 section 301(a)(1)(A)(i). Such

voter verification means can be categorized as either "direct," as with optical scan or a

machine-generated paper ballot, where the voter can directly examine the representation

of his ballot, or "indirect," as with many touch-screen Direct Recording Electronic-- DRE

machines, where the voter can only verify the "fundamental representation" of his ballot

through the assistance of intervening hardware and/or software.

17

For voting systems that create more than one representation of the voter's ballot (such as

one electronic and one on paper), the TGDC interprets the HAVA language to require that

such voter verification must apply to the representation (to be called here the fundamental

representation) that is used for the initial vote tabulation.

22

1 The TGDC therefore finds it useful to divide voting systems into two categories: those

2 (class DV) where each voter is presented a fundamental representation of his ballot that

3 the voter may directly verify, and those (class IV) not in class DV.

4 The TGDC has concluded that voting systems in class IV or DV must be held to

5 significantly different security requirements, including different constraints on voting

6 system development, different requirements for system documentation, and different

7 testing to mitigate the different risks associated with each type of voting system.

8

9 The TGDC therefore requests that NIST perform research and develop standards

10 documents that:

11

12 1. Clarifies the distinction between class DV and class IV voting systems as may be

13   necessary,

14 2. Elaborates and defines the different requirements to be satisfied by class DV and

15   IV voting systems, and

16 3. Reviews methods of verification accessible by voters with disabilities.

17

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19   I hereby certify the accuracy of Resolution #12-05:

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21   _____
22   Craig S. Burkhardt, Parlimentarian
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U.S. Election Assistance Commission

Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005

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Resolution # 14-05,   Offered by: Dr. Rivest

Title: Commercial Off-The-Shelf Software ("COTS Software")

8

The TGDC has considered the advisability of using Commercial Off-The-Shelf Software

("COTS Software") within voting systems, from a security perspective. It has concluded

that, generally speaking, the use of COTS software introduces excessive and unnecessary

risk and should be avoided, while specific well-motivated exceptions to this rule may be

required upon occasion. The TGDC directs NIST to research and draft standards

documents requiring:

1. That the use of COTS software within voting systems is not allowed unless it

    meets specific exceptional conditions, and

2. That the criteria for exceptions shall be drafted by NIST.

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I hereby certify the accuracy of Resolution #14-05:

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Craig S. Burkhardt, Parlimentarian

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U.S. Election Assistance Commission

Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005

5

Resolution # 15-05,   Offered by: Dr. Rivest

Title: Software Distribution

8

The TGDC has concluded that, generally speaking, the manner in which software is

loaded onto voting systems is not governed by existing standards, and that it is a

significant security issue, that warrants more stringent controls. It is important to know

which software has been installed on a voting system, when the software has been

installed, and from what sources. Without strict controls on these processes, noncertified

software could be loaded onto voting systems, with potentially disastrous results. The

TGDC directs NIST to research and draft standards documents requiring:

1. That the distribution of any software to voting systems shall only be performed by

    means of physically distributed "read only" or "write once" media, including

    software such as:

      (a) Operating system required software,

      (b) Updates and patches,

      (c) Data files, and

      (d) Voting system software.

1   2. That the electronic transmission of any software to voting machines via networks

2   or wireless introduces extreme risk and should be approached with extreme

3   caution,

4   3. That the software will include an integrity check (such as a digital signature that

5   positively authenticates its source) that must be verified as part of the process of

6   loading the software, and

7   4. That the record of loading the software will be written permanently to a system

8   audit log kept in write-once memory.

9

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11   I hereby certify the accuracy of Resolution #15-05:

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13   _____
14   Craig S. Burkhardt, Parlimentarian
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1   **U.S. Election Assistance Commission**

2   **Technical Guidelines Development Committee**

3   *Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005*

4

5   **Resolution # 16-05**,   Offered by: Dr. Rivest

6   Title: Setup Validation

7

8   The TGDC has considered the issue of electronic voting machine setup validation and has

9   concluded that current standards and practice need substantial improvement in this regard.

10   A setup validation method ensures that a voting system contains the authorized software,

11   contains no unauthorized software, and is in the proper initial state. The TGDC requests

12   NIST to do research and develop standards:

13   1.   That specify the characteristics of acceptable setup validation methods (such as,

14   for example, that the setup validation method may not modify the state of the

15   system nor require the execution of any software currently on the system), and

16   2.   That require each voting system submission to specify an acceptable setup

17   validation method.

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20   I hereby certify the accuracy of Resolution #16-05:

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23   _____

           Craig S. Burkhardt, Parlimentarian

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U.S. Election Assistance Commission

Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005

5

Resolution # 17-05,   Offered by: Dr. Rivest

Title: Testing

8

The TGDC directs NIST to research and draft standards documents requiring testing of

voting systems that includes a significant amount of open-ended research for

vulnerabilities by an analysis team supplied with complete source code and system

documentation and operational voting system hardware. The vulnerabilities sought should

not exclude those involving collusion between multiple parties (including vendor insiders)

and should not exclude those involving adversaries with significant financial and technical

resources.

16

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I hereby certify the accuracy of Resolution #17-05:

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Craig S. Burkhardt, Parlimentarian

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Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005

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6 **Resolution # 18-05**,   Offered by: Dr. Rivest

7 Title: Documentation

8

9 The TGDC has concluded that it is critical to the security of voting systems that they be

10 documented thoroughly according to a well-specified set of documentation criteria.

11 Proper documentation is an important and essential part of the input for security

12 evaluation. Voting systems that are not well documented may also be less secure in that

13 poor specification of features and operation can facilitate incorrect operation and improper

14 responses to error conditions and other unexpected events.

15

16 This documentation should address all areas of voting system design, architecture,

17 features, controls, and operational modes, and also include recommended management

18 and maintenance procedures. The documentation should specify exactly the operational

19 context of the voting system and all assumptions made affecting the system and how it is

20 operated. It should include all security requirements for operation of the system, including

21 manual, non-computerized procedures. Particular attention should be paid to processes

1   and procedures that reduce security vulnerabilities throughout the entire voting

2   preparation, balloting, counting and audit phases.

3

4   The TGDC directs NIST to research and draft standards documents requiring voting

5   system documentation, to include but not be limited to such items as:

6   1. Voting system design information including source code and discussion of built-in

7   or procedural protections from NIST Special Publication 800-53 such as for:

8   (a)   System and information integrity,

9   (b)   Identification and authentication,

10   (c)   Access control,

11   (d)   Audit and accountability, and

12   (e)   System and communications protection.

13   2. Specifications of compatible software or equipment (i.e., operating systems,

14   utilities),

15   3. Evaluation-related documentation including:

16   (a)   Risk assessment information,

17   (b)   Results of certification, accreditation, and security assessments, and

18   (c)   Contingency planning recommendations.

19   4. Operational procedures including:

20   (a)   Modes and procedures for each mode,

21   (b)   Maintenance procedures,

22   (c)   Media protection and media loading procedures, and

1   (d)   Recount procedures.

2   5. Awareness and training recommendations,

3   6. Incident response procedures, and

4   7. Other information deemed relevant to a security evaluation of the proposed voting

5   system.

6

7   The issues of [a] redundant representations of ballots created by the voting system and [b]

8   how recounts of these ballots are to be handled are particularly important. Voting systems

9   that store redundant representations of a cast vote must include, as part of their

10   specification, a detailed description of how such representations may be used in counting

11   votes and recounting votes. The description must also specify what procedures, if any,

12   may (or must) be used to detect discrepancies between the various representations, and

13   how such discrepancies may be resolved.

14

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16   I hereby certify the accuracy of Resolution #18-05:

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18   _____
19   Craig S. Burkhardt, Parlimentarian
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U.S. Election Assistance Commission

Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005

5

Resolution # 21-05,   Offered by: Dr. Rivest

Title: Multiple Representations of Ballots

8

Voting systems may create one or more electronic representations of ballots in addition to

any paper record produced.. For example, three redundant electronic copies may be made,

for reliability purposes. As another example, the scanning of an op-scan ballot may create

another, electronic, representation of the ballot. A number of issues are related to the use

of multiple representations (both electronic and paper) that are in some cases relatively

new and not completely identified or understood, and in other cases need uniform

terminology and procedures. These issues include:

16

   1. Preventing, detecting, and handling disagreements between the representations, in

      the rare event that they should occur,

   2. Converting between representations, and ensuring that ballots are not multiply

      converted and counted,

   3. Use of multiple representations in fraud analysis,

   4. Authenticity of the representations,

1   5. Marking of ballot representations with unique identifiers, (if and when possible to

2   do so while preserving voter privacy), and

3   6. Conversion to/from standard formats.

4

5   The TGDC has concluded that further research is advisable in identifying potential

6   problems associated with voting systems that use multiple representations of ballots, and

7   in identifying best approaches for handling such problems. The TGDC thus requests that

8   NIST perform such research and draft standards documents that reflect NIST's

9   determination of the best practices and best approaches for handling these problems.

10

11

12   I hereby certify the accuracy of Resolution #21-05:

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14   _____

15   Craig S. Burkhardt, Parlimentarian

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U.S. Election Assistance Commission

Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005

5

Resolution # 22-05,   Offered by: Dr. Rivest

Title: Federal Standards

8

Voting systems, while specialized in their purpose, often have many aspects in common

with general information technology (IT) systems. Guidelines, standards, and testing

programs have been developed for U.S. Government civilian IT systems, typically

utilizing ANSI-approved and other voluntary consensus standards, including the

Cryptographic Module Validation Program (CMVP) for analysis and testing of

cryptographic modules and software, and the National Voluntary Laboratory

Accreditation Program (NVLAP) for accreditation of testing laboratories. NIST is

currently creating an information security standard (mandated by the Federal Information

Security Management Act, specifically, *Recommended Security Controls for Federal*

Information Systems, draft NIST Special Publication 800-53) affecting all federal

government systems. This draft standard specifies the inclusion and proper use of

security-related protections affecting many areas of IT system design and development,

management, testing, and operations -- all of which have relevance to voting systems.

1   This and other similar efforts by the U.S. Government have the benefits of having been

2   developed in a public process and having had successful track records with industry.

3

4   The TGDC therefore requests that NIST examine existing federal guidelines, standards,

5   and testing programs, and ANSI-approved and other voluntary consensus standards for

6   security in general information technology systems for their relevance and applicability in

7   standards to voting systems, and to draft standards documents that follow such prior

8   guidelines, standards, and programs when possible and where appropriate.

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11   I hereby certify the accuracy of Resolution #22-05:

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13   _____
14   Craig S. Burkhardt, Parlimentarian
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U.S. Election Assistance Commission

Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005

Resolution # 23-05,   Offered by: Dr. Rivest

Title: Common Ballot Format Specifications

The TGDC has concluded that the adoption of standard formats for election-related

information, such as ballots (both blank and filled-in), has many positive benefits and is

worth pursuing. An example of such a standard is OASIS Election Markup Language

(EML) Version 4.0, which is an XML-based specification. The TGDC therefore requests

NIST to do research and develop standards documents:

1. Specifying what existing election information format standards (or portions thereof

or variations thereof) are acceptable for use in voting systems, and

2. Requiring that voting systems use such standards wherever possible.

NIST's evaluation of existing election information standards shall consider fitness for

function under existing election codes, security, ease and cost of implementation, and

other factors judged relevant by NIST. If no existing election information format

standards (or portions thereof, or variations thereof) are judged by NIST, upon its detailed

1 examination, to be acceptable for current use, then NIST should so recommend, and this

2 resolution will have no net effect at this time.

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5   I hereby certify the accuracy of Resolution #23-05:

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8   Craig S. Burkhardt, Parlimentarian

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4   *Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005*

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6   **Resolution # 24-05,**   Offered by: Dr. Schutzer

7   Title: Conformance Clause

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9   The conformance clause of a standard provides the answers to the important question:

10   what may conform and how? A conformance clause defines, at a high level, what is

11   required of implementers of the specification. The clause may specify minimal

12   requirements for certain functions, as well as extensibility, optional features, and

13   alternative approaches and how they are to be handled. The TGDC requests that NIST

14   draft a conformance clause section for the Voting System Standard.

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17   I hereby certify the accuracy of Resolution #24-05:

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19   _____
20   Craig S. Burkhardt, Parlimentarian
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U.S. Election Assistance Commission

3   **Technical Guidelines Development Committee**

4   *Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005*

5

6   **Resolution # 25-05**,   Offered by: Dr. Schutzer

7

8   Title: Precise and Testable Requirements

9

10   For qualification of voting systems to be consistent, fair, and meaningful, it is necessary to

11   control variability in the conformance assessment system. Both the requirements to be

12   tested and the methods by which they are to be tested must be specified with appropriate

13   precision. The TGDC requests that NIST:

14   1. Conduct a review and analysis of the requirements in the 2002 VSS to ensure that

15   they are sufficiently precise to enable meaningful testing,

16   2. Include the requirements from the 2002 VSS that are already precise and testable,

17   3. Write testable requirements for those requirements that are not sufficiently

18   precise,

19   4. Expand the testing standards in the VSS to specify test methods of those

20   requirements,

21   5. Update the requirements where appropriate during the review, such as reliability

22   and accuracy specifications, and

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1   6. Adopt, to the extent that NIST determines it is advisable, commonly used

2   equivalent commercial test methods.

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5   I hereby certify the accuracy of Resolution #25-05:

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7   _____
8   Craig S. Burkhardt, Parlimentarian
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U.S. Election Assistance Commission

Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005

Resolution # 26-05,   Offered by: Dr. Schutzer

Title: Uniform Testing Methods and Procedures

For consistency and transparency of voting systems testing, and to increase the public trust and confidence in the testing of voting systems, it is necessary that the same set of testing methods and procedures be used by each testing organization. The TGDC requests that NIST draft guidance for how to develop a public set of test methods and procedures.

I hereby certify the accuracy of Resolution #26-05:

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Craig S. Burkhardt, Parlimentarian

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U.S. Election Assistance Commission

Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005

Resolution # 27-05, Offered by: Dr. Schutzer

Title: Non-Conformant Voting Systems

A provision in the 2002 VSS allows qualification of voting systems that do not conform

to the requirements. [*"Any uncorrected deficiency that does not involve the loss or*

corruption of voting data shall not necessarily be cause for rejection."] If there are

requirements that are frequently unmet by qualified systems, these requirements should

be reviewed for possible elimination. The TGDC requests that NIST review the text of

the 2002 VSS to determine if the provision for qualification of voting systems that do not

conform to the requirements should be deleted.

I hereby certify the accuracy of Resolution #27-05:

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Craig S. Burkhardt, Parlimentarian

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U.S. Election Assistance Commission

Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005

Resolution # 28-05,   Offered by: Dr. Schutzer

Title: Publicly Available Qualification Data

The TGDC recognizes that public records laws are standard practice in many arenas

where public trust and/or safety are at stake. To the extent possible, qualification test

reports should be released to the public as evidence that the qualification process was

responsibly executed. To handle those cases where release of the entirety of the reports is

problematic, the TGDC requests that NIST recommend standards on qualification data to

be provided, called a "Public Information Package," that will set out requirements on the

information that must be publicly available and published.

I hereby certify the accuracy of Resolution #28-05:

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Craig S. Burkhardt, Parlimentarian

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U.S. Election Assistance Commission

Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005

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Resolution # 29-05,   Offered by: Dr. Schutzer

Title: Ensuring Correctness of Software Code

8

Volume 1, Section 4.2 and Volume 2, Section 5.4 of the 2002 VSS defines coding

standards, as well as a source code review to be conducted by Independent Testing

Authorities (ITAs) to enforce those coding standards. These coding standards are a means

to an end, the end being an ITA evaluation of the code's correctness to a high level of

assurance. The TGDC requests that NIST:

1. Recommend standards to be used in evaluating the correctness of voting system

   logic, including but not limited to software implementations, and

2. Evaluate the 2002 VSS software coding standards with respect to their

   applicability to the recommended standards, and either revise them, delete them,

   or recommend new software coding standards, as appropriate.

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I hereby certify the accuracy of Resolution #29-05:

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Craig S. Burkhardt, Parlimentarian

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U.S. Election Assistance Commission

Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005

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Resolution #30-05,   Offered by: Dr. Schutzer

Title: Quality Management Standards

8

Volume 1, Sections 7 and 8 and Volume 2, Section 7 of the 2002 VSS require the vendor

to follow certain quality assurance and configuration management practices and require

the ITA to conduct several audits and documentation reviews to ensure that they were

followed. These are a means to ensure that the vendor is capable of following responsible

software engineering practices. The TGDC requests that NIST:

1. Review and analyze quality management standards to determine their relevance to

     voting systems (and their security), and

2. Recommend changes to the VSS quality assurance and configuration management

     sections based on the findings above.

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I hereby certify the accuracy of Resolution #30-05:

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Craig S. Burkhardt, Parlimentarian

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Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005

Resolution # 31-05,   Offered by: Dr. Schutzer

Title: Maintenance of the VSS

All specifications contain ambiguities that are discovered during testing of

implementations. Similarly, all specifications contain requirements that can be subject to

multiple, equally defensible interpretations. The TGDC requests that NIST draft a

strategy for maintenance of the VSS, which would address the issuance of interpretations

of the VSS, the resolution of disputes, and the continuous improvement and revision of

the VSS.

I hereby certify the accuracy of Resolution #31-05:

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Craig S. Burkhardt, Parlimentarian

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Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005

Resolution #32-05,   Offered by: Dr. Schutzer

Title: Sharing Information and De-Qualification of Voting Systems

The TGDC recognizes that no conformance assessment process is perfect. Systems with

non-conformities, even serious ones, can be granted qualification, only to cause problems

at the precinct level after they are deployed. When a serious flaw is discovered in one

jurisdiction, other affected jurisdictions should be informed. At present, however, there is

no process to de-qualify voting systems that are discovered, after qualification has been

granted, to have serious problems. The TGDC requests that NIST define a process and

specification for sharing information amongst jurisdictions concerning qualified voting

systems that have been discovered to have non-conformities, present problems and known

vulnerabilities.

I hereby certify the accuracy of Resolution #32-05:

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Craig S. Burkhardt, Parlimentarian

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U.S. Election Assistance Commission

Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005

5

Resolution #33-05,   Offered by: Dr. Schutzer

Title: Glossary and Voting Model

8

The 2002 VSS does not contain a voting model depicting the entire voting process. The

current Glossary of Terms needs revision. The TGDC requests that NIST update the 2002

VSS Glossary of Terms and develop a Voting Process Model that incorporates

terminology from the revised Glossary to clearly depict the entire voting process and to

determine where a voting system fits into this larger process model.

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I hereby certify the accuracy of Resolution #33-05:

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Craig S. Burkhardt, Parlimentarian

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Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005

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Resolution #34-05,   Offered by: Dr. Schutzer

Title: Assessment Papers on Recommendations for Future Work

8

Separate from the immediate work effort to update the 2002 VSS specifications, the

TGDC recognizes the need to develop a series of assessment papers that address important

issues related to the interrelation of Election Management and VSS systems. These issues

are likely to lead to future specifications for VSS systems. The TGDC requests that NIST

develop assessment papers that discuss the need for:

14

1. Standards and tests to support future systems built to support election day

   verification of voters,

2. Standards for formatting of registration information (possibly using Extensible

   Markup Language-- XML) to make it easier for states to share information,

3. Tests and standards to validate compensating process, procedures and fixes that

   address known VSS deficiencies,

4. Better ways to integrate the voting registration process with the rest of the voting

   process,

1   5. Standards and tests to support systems that implement absentee voting,

2   6. Standards and tests to support systems that implement multi-day voting,

3   7. Standards specifying what existing election information format standards (or

4   portions thereof or variations thereof) are acceptable for use in voting systems,

5   8. Standards supporting voter interactions and issues of correctly capturing

6   indications of voter choice, and

7   9. Standards supporting the interrelationship of polling place operation with usability,

8   accessibility and privacy.

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11   I hereby certify the accuracy of Resolution #34-05:

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13   _____
14   Craig S. Burkhardt, Parlimentarian
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Technical Guidelines Development Committee

Resolution adopted by the TGDC at their plenary meeting, January 18 and 19, 2005

Resolution #35-05,   Offered by: Dr. Rivest

Title: Wireless

The TGDC has considered the advisability of using wireless technology within voting

systems from a security perspective. It has concluded that, for now, the use of wireless

technology introduces severe risk and should be approached with extreme caution.   The

TGDC directs NIST to research and draft standards documents for the use of wireless

communications devices in voting systems.

I hereby certify the accuracy of Resolution #35-05:

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Craig S. Burkhardt, Parlimentarian

U.S. Election Assistance Commission

Technical Guidelines Development Committee

3   *Resolution adopted by the TGDC at their plenary meeting, March 9, 2005*

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5   **Resolution #36-05**   Offered by Ms. Caldas

6   Title: Consensus Standards

7

8   The TGDC recognizes the timeframes established in HAVA as necessary to ensure a prompt

9   response to the nation's voting system issues, which it was written to address. The TGDC

10   further recognizes that a robust voluntary consensus standards system exists in this country

11   and should be relied on, to the greatest extent possible, to facilitate the long-term development

12   and regular maintenance of voluntary voting system guidelines and standards.

13

14   Moreover, the TGDC encourages the EAC to rely not only on NIST's recognized expertise,

15   but also on the US voluntary consensus standards and conformity assessment systems, as

16   exemplified by programs and standards which comply with the requirements set-forth in

17   OMB Circular A119, as part of the EAC's long-term systemic approach to addressing the

18   nation's continuing need for up-to-date, voluntary voting system guidelines and standards.

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20   I hereby certify the accuracy of Resolution #36-05:

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23   _____
24   Craig S. Burkhardt, Parlimentarian
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1   **U.S. Election Assistance Commission**

2   **Technical Guidelines Development Committee**

3   *Resolution adopted by the TGDC at their plenary meeting, April 20-21, 2005*

4

5   **Resolution #37-05**,   Offered by: Dr. Semerjian

6   Title: Work Product Instructions to Chair and Staff of National Institute of Standards and
7   Technology (NIST)
8

9   The Technical Guidelines Development Committee (TGDC) intends to consider and adopt

10   Sections of the Final Draft of the initial recommendations to the Executive Director of the

11   Election Assistance Commission (EAC) during its April 20 and 21, 2005 meeting.

12

13   Each Section of the Final Draft is to be presented by a NIST staff member, followed by a

14   question and answer session. Immediately thereafter, specific proposals for changes to that

15   Section will be entertained by the TGDC. The Chair will attempt to reach unanimous consent

16   for suggested changes. If unanimous consent is not reached, a TGDC member may make a

17   motion, and a recorded vote will be taken on the matter. At the conclusion of the

18   consideration of each Section, a vote will be taken to adopt the entire Section, as revised by

19   motions adopted through unanimous consent or recorded vote.

20

21   At the conclusion of the meeting, the TGDC Chair will assign NIST staff members to revise

22   the Sections as required by votes of the TGDC. The TGDC Chair will supervise this process

23   to assure that revisions reflect the intent of the TGDC as expressed in its votes and

1   resolutions. In supervising the revision process, the TGDC Chair shall not depart from

2   technical decisions made by the TGDC.

3

4   The initial recommendations to the Executive Director of the EAC shall consist of the adopted

5   Sections as revised by NIST staff under the supervision of the TGDC Chair. The TGDC

6   Chair is to deliver this work product to the EAC.

7

8   Because the work product will have been developed under a tight statutory schedule, the

9   TGDC expects that minor and non-substantive drafting errors may have occurred. NIST is

10   requested to compile relevant corrections in a supplement, which shall be delivered to the

11   TGDC and EAC at an appropriate time.

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14   I hereby certify the accuracy of Resolution #37-05:

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16   _____
17   Craig S. Burkhardt, Parlimentarian
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1 **U.S. Election Assistance Commission**

2 **Technical Guidelines Development Committee**

3 *Resolution adopted by the TGDC at their plenary meeting, April 20-21, 2005*

4

5 **Resolution #38-05**,   Offered by: Dr. Semerjian

6 Title: Procedural Resolution Regarding "Grandfathering"

7

8 Pursuant to HAVA, the TGDC will recommend Voluntary Voting Systems Guidelines

9 (VVSG) to the EAC. Although the VVSG was developed based on current best practices and

10 available technology, the recommendation may not include all practices currently followed or

11 technologies currently utilized by election administrators. Consequently, existing practices in

12 some jurisdictions may not be in compliance with the VVSG. The TGDC finds that whether

13 such practices or technologies not contained within the VVSG should be "grandfathered" is a

14 policy question not within the jurisdiction of the TGDC, and not within the statutory duties of

15 NIST.

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19 I hereby certify the accuracy of Resolution #38-05:

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21   _____
22   Craig S. Burkhardt, Parlimentarian
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U.S. Election Assistance Commission

Technical Guidelines Development Committee

3   *Resolution adopted by the TGDC at their plenary meeting, April 20-21, 2005*

4

5   **Resolution #39-05-revised**,   Offered by: Dr. Semerjian

6   Title: Voter Verified Paper Audit Trail Assignment

7

8   The TGDC recognizes that Voter Verified Paper Audit Trails (VVPATs) have been

9   developed in some jurisdictions without guidelines. The TGDC is aware that some states

10   currently require or intend to require use of VVPATs.

11

12   During its January 18, 2005 meeting, the TGDC received a request from the EAC to develop

13   VVPAT guidelines for use by states and election jurisdictions that have chosen to require

14   VVPATs so that those states can more effectively implement VVPATs. Subsequently, the

15   TGDC instructed NIST to develop and submit VVPAT formal requirements as a part of its

16   Voluntary Voting Systems Guidelines (VVSG) technical assistance work product.

17

18   The TGDC neither endorses nor opposes the use of VVPAT.

19

20   I hereby certify the accuracy of Resolution #39-05:

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22   _____
23   Craig S. Burkhardt, Parlimentarian
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<div align="center">**U.S. Election Assistance Commission**</div>

<div align="center">**Technical Guidelines Development Committee**</div>

<div align="center">*Resolution adopted by the TGDC at their plenary meeting, April 20-21, 2005*</div>

Resolution #40-05,   Offered by: Ms. Quesenbery

Title: EAC Consideration of Initial Recommendations

The Technical Guidelines Development Committee (TGDC) recognizes that it will deliver its first set of recommendations to the Executive Director of the Election Assistance Commission (EAC), and that shortly thereafter such recommendations will be reviewed by the EAC and its Board of Advisors and Standards Board. The TGDC is aware of individuals and organizations that wish to provide comments on the recommendations, and is further informed such individuals and organizations may not understand how they can effectively provide such comments.

The TGDC therefore recommends that the EAC announce how and when comments on the initial recommendations may be provided to the EAC for its consideration.

I hereby certify the accuracy of Resolution #40-05:

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Craig S. Burkhardt, Parlimentarian